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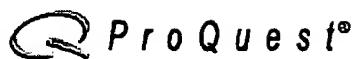
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to bridge the gap between lowlevel **image analysis** and image understanding at the semantic level. This
feedback loop is used to iteratively refine the **query vector** and search space. 3.3. Relevance Feedback
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. 5 I Part I Image System 7 2 Introduction To **Image Analysis** And Retrieval :8 2.1 Feature
. 38 4.2.1 Update of the **query vector** ~q i.
research.microsoft.com/~yongrui/html//ps/mythesis.pdf

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Relevance scale **1 [Image Retrieval: Adaptive nearest neighbor search for relevance feedback in large image databases](#)**

P. Wu, B. S. Manjunath

October 2001 **Proceedings of the ninth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  [pdf\(1.38 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Relevance feedback is often used in refining similarity retrievals in image and video databases. Typically this involves modification to the similarity metrics based on the user feedback and recomputing a set of nearest neighbors using the modified similarity values. Such nearest neighbor computations are expensive given that typical image features, such as color and texture, are represented in high dimensional spaces. Search complexity is a critical issue while dealing with large databases and ...

Keywords: nearest neighbor search, relevance feedback, similarity retrieval

2 [Multimedia and visualization \(MV\): A pivot-based index structure for combination of feature vectors](#)

Benjamin Bustos, Daniel Keim, Tobias Schreck

March 2005 **Proceedings of the 2005 ACM symposium on Applied computing**

Publisher: ACM Press

Full text available:  [pdf\(172.44 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

We present a novel indexing schema that provides efficient nearest-neighbor queries in multimedia databases consisting of objects described by multiple feature vectors. The benefits of the simultaneous usage of several (statically or dynamically) weighted feature vectors with respect to retrieval effectiveness have been previously demonstrated. Support for efficient multi-feature vector similarity queries is an open problem, as existing indexing methods do not support dynamically p ...

Keywords: combination of features, content-based indexing and retrieval, nearest neighbor queries

3 [Integrating symbolic images into a multimedia database system using classification and abstraction approaches](#)

Aya Soffer, Hanan Samet

December 1998 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 7 Issue 4

Publisher: Springer-Verlag New York, Inc.

Full text available: [pdf\(227.30 KB\)](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Symbolic images are composed of a finite set of symbols that have a semantic meaning. Examples of symbolic images include maps (where the semantic meaning of the symbols is given in the legend), engineering drawings, and floor plans. Two approaches for supporting queries on symbolic-image databases that are based on image content are studied. The classification approach preprocesses all symbolic images and attaches a semantic classification and an associated certainty factor to each object that ...

Keywords: Image indexing, Multimedia databases, Query optimization, Retrieval by content, Spatial databases, Symbolic-image databases

4 DB-IR-1 (databases and information retrieval): indexing and query processing

 efficiency: Image similarity search with compact data structures

Qin Lv, Moses Charikar, Kai Li

November 2004 **Proceedings of the thirteenth ACM conference on Information and knowledge management**

Publisher: ACM Press

Full text available: [pdf\(278.78 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The recent theoretical advances on compact data structures (also called "sketches") have raised the question of whether they can effectively be applied to content-based image retrieval systems. The main challenge is to derive an algorithm that achieves high-quality similarity searches while using compact metadata. This paper proposes a new similarity search method consisting of three parts. The first is a new region feature representation with weighted $\$=< i ></ i >< inf >1</ inf >$ di ...

Keywords: compact data structures, image similarity, search

5 SamMatch: a flexible and efficient sampling-based image retrieval technique for large

 image databases

Kien A. Hua, Khanh Vu, Jung-Hwan Oh

October 1999 **Proceedings of the seventh ACM international conference on Multimedia (Part 1)**

Publisher: ACM Press

Full text available: [pdf\(1.70 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The rapid growth of digital image data increases the need for efficient and effective image retrieval systems. Such systems should provide functionality that tailors to the user's need at the query time. In this paper, we propose a new image retrieval technique that allows users to control the relevance of the results. For each image, the color contents of its regions are captured and used to compute similarity. Various factors, assigned automatically or by the user, allow high recall and ...

Keywords: color-spatial information, content-based indexing, image database, image retrieval, sampling

6 A practical query-by-humming system for a large music database

Naoko Kosugi, Yuichi Nishihara, Tetsuo Sakata, Masashi Yamamoto, Kazuhiko Kushima

 October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(1.05 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

A music retrieval system that accepts hummed tunes as queries is described in this paper. This system uses similarity retrieval because a hummed tune may contain errors. The retrieval result is a list of song names ranked according to the closeness of the match. Our ultimate goal is that the correct song should be first on the list. This means that eventually our system's similarity retrieval should allow for only one correct answer.

The most significant improvement our system has ove ...

7 Research sessions: query processing II: Efficient k-NN search on vertically decomposed data



 Arjen P. de Vries, Nikos Mamoulis, Niels Nes, Martin Kersten

June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available:  pdf(1.26 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Applications like multimedia retrieval require efficient support for similarity search on large data collections. Yet, nearest neighbor search is a difficult problem in high dimensional spaces, rendering efficient applications hard to realize: index structures degrade rapidly with increasing dimensionality, while sequential search is not an attractive solution for repositories with millions of objects. This paper approaches the problem from a different angle. A solution is sought in an unconvent ...

8 Links for a better web: Refinement of TF-IDF schemes for web pages using their hyperlinked neighboring pages



 Kazunari Sugiyama, Kenji Hatano, Masatoshi Yoshikawa, Shunsuke Uemura

August 2003 **Proceedings of the fourteenth ACM conference on Hypertext and hypermedia**

Publisher: ACM Press

Full text available:  pdf(211.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In IR (information retrieval) systems based on the vector space model, the TF-IDF scheme is widely used to characterize documents. However, in the case of documents with hyperlink structures such as Web pages, it is necessary to develop a technique for representing the contents of Web pages more accurately by exploiting the contents of their hyperlinked neighboring pages. In this paper, we first propose several approaches to refining the TF-IDF scheme for a target Web page by using the contents ...

Keywords: TF-IDF scheme, WWW, hyperlink, information retrieval

9 Query model-based content-based image retrieval (abstract): similarity definition, application and automation



 Horst Eidenberger

October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(241.30 KB) Additional Information: [full citation](#), [references](#), [index terms](#)

 Image analogies

Aaron Hertzmann, Charles E. Jacobs, Nuria Oliver, Brian Curless, David H. Salesin
 August 2001 **Proceedings of the 28th annual conference on Computer graphics and interactive techniques**

Publisher: ACM Press

Full text available:  pdf(8.39 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes a new framework for processing images by example, called "image analogies." The framework involves two stages: a *design phase*, in which a pair of images, with one image purported to be a "filtered" version of the other, is presented as "training data"; and an *application phase*, in which the learned filter is applied to some new target image in order to create an "analogous" filtered result. Image analogies are ...

Keywords: Markov random fields, autoregression, example-based rendering, non-photorealistic rendering, texture synthesis, texture transfer, texture-by-numbers

11 Technical poster session 3: multimedia tools, end-systems, and applications: Cortina: 

 a system for large-scale, content-based web image retrieval

Till Quack, Ullrich Mönich, Lars Thiele, B. S. Manjunath

October 2004 **Proceedings of the 12th annual ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(186.03 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Recent advances in processing and networking capabilities of computers have led to an accumulation of immense amounts of multimedia data such as images. One of the largest repositories for such data is the World Wide Web (WWW). We present Cortina, a large-scale image retrieval system for the WWW. It handles over 3 million images to date. The system retrieves images based on visual features and collateral text. We show that a search process which consists of an initial query-by-keyword or quer ...

Keywords: MPEG-7, WWW, association rules, clustering, large-scale, online, relevance feedback, semantics, web image retrieval

12 Image Categorization by Learning and Reasoning with Regions 

Yixin Chen, James Z. Wang

December 2004 **The Journal of Machine Learning Research**, Volume 5

Publisher: MIT Press

Full text available:  pdf(1.31 MB) Additional Information: [full citation](#), [abstract](#)

Designing computer programs to automatically categorize images using low-level features is a challenging research topic in computer vision. In this paper, we present a new learning technique, which extends Multiple-Instance Learning (MIL), and its application to the problem of region-based image categorization. Images are viewed as bags, each of which contains a number of instances corresponding to regions obtained from image segmentation. The standard MIL problem assumes that a bag is labeled p ...

13 Let's search for songs by humming! 

 Naoko Kosugi, Yuichi Nishihara, Seiichi Kon'y'a, Masashi Yamamoto, Kazuhiko Kushima

October 1999 **Proceedings of the seventh ACM international conference on Multimedia (Part 2)**

Publisher: ACM Press

Full text available:  pdf(114.25 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

14 Multimedia and visualization: Dynamic structuring of web information for access visualization

 Jess Y. S. Mak, Hong Va Leong, Alvin T. S. Chan
March 2002 **Proceedings of the 2002 ACM symposium on Applied computing**

Publisher: ACM Press

Full text available:  pdf(765.23 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The Internet has led to the formation of a global information infrastructure. To explore a web site, a site map would be useful as a short cut for a user to locate for the target information in a structured and efficient manner, rather than drilling into the web site following hyperlinks, reading possibly irrelevant information. Useless information impacts a mobile web environment, where mobile clients are only connected with unreliable wireless channels of limited bandwidth. Structured web page ...

Keywords: DOM, VRML, XML, visualization, web document structure

15 Scalable algorithms for mining large databases

 Rajeev Rastogi, Kyuseok Shim
August 1999 **Tutorial notes of the fifth ACM SIGKDD international conference on Knowledge discovery and data mining**

Publisher: ACM Press

Full text available:  pdf(4.11 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

16 Posters: Semantic-meaningful content-based image retrieval in wavelet domain

 Yongqing Sun, Shinji Ozawa
November 2003 **Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval**

Publisher: ACM Press

Full text available:  pdf(399.09 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we propose a semantic-meaningful approach for region-based image retrieval in image database. Our retrieval system is based on wavelet transform for its decomposition property similarity with human visual processing. At first, with the fact that semantic region segmentation desires low frequency resolution, pixel clustering algorithm is applied for image partition in the Low-Low(LL) frequency subband of image wavelet transform. Secondly, with the fact that accurate region i ...

Keywords: content-based image retrieval, hierarchical feature vector, semantic image segmentation, wavelet transform

17 Multimedia communications, relevance feedback and indexing: Bitmap indexing

 method for complex similarity queries with relevance feedback

Guang-Ho Cha

November 2003 **Proceedings of the 1st ACM international workshop on Multimedia databases**

Publisher: ACM Press

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The similarity indexing and searching is well known to be a difficult one for high-dimensional applications such as multimedia databases. Especially, it becomes more

difficult when multiple features have to be indexed together. Moreover, few indexing methods are currently available to effectively support disjunctive queries for relevance feedback. In this paper, we propose a novel indexing method that is designed to efficiently handle complex similarity queries as well as relevance feedback in hi ...

Keywords: bitmap index, content-based image retrieval, high-dimensional index, relevance feedback, similarity search

18 Mesh manipulation: Mesh-based inverse kinematics

 Robert W. Sumner, Matthias Zwicker, Craig Gotsman, Jovan Popović
July 2005 **ACM Transactions on Graphics (TOG)**, Volume 24 Issue 3

Publisher: ACM Press

Full text available:  pdf(584.93 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The ability to position a small subset of mesh vertices and produce a *meaningful* overall deformation of the entire mesh is a fundamental task in mesh editing and animation. However, the class of meaningful deformations varies from mesh to mesh and depends on mesh kinematics, which prescribes valid mesh configurations, and a selection mechanism for choosing among them. Drawing an analogy to the traditional use of skeleton-based inverse kinematics for posing skeletons. we define *mesh-bas* ...

Keywords: animation, deformation, geometric modeling

19 Combining multi-visual features for efficient indexing in a large image database

Anne H. H. Ngu, Quan Z. Sheng, Du Q. Huynh, Ron Lei
April 2001 **The VLDB Journal — The International Journal on Very Large Data Bases**,
Volume 9 Issue 4

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(493.09 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

The optimized distance-based access methods currently available for multidimensional indexing in multimedia databases have been developed based on two major assumptions: a suitable distance function is known a priori and the dimensionality of the image features is low. It is not trivial to define a distance function that best mimics human visual perception regarding image similarity measurements. Reducing high-dimensional features in images using the popular principle component analysis (PCA) mi ...

Keywords: High-dimensional indexing, Image retrieval, Neural network

20 Machine learning for IR: Learning effective ranking functions for newsgroup search

 Wensi Xi, Jesper Lind, Eric Brill
July 2004 **Proceedings of the 27th annual international ACM SIGIR conference on Research and development in information retrieval SIGIR '04**

Publisher: ACM Press

Full text available:  pdf(281.11 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Web communities are web virtual broadcasting spaces where people can freely discuss anything. While such communities function as discussion boards, they have even greater value as large repositories of archived information. In order to unlock the value of this resource, we need an effective means for searching archived discussion threads. Unfortunately the techniques that have proven successful for searching document collections and the Web are not ideally suited to the task of searching archive ...

Keywords: information retrieval, linear regression, machine learning, newsgroup search, support vector machines

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 Muhammed, H.H.; Ammenberg, P.; Bengtsson, E.;
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1 Applications: Fast retrieval of high-dimensional feature vectors in P2P networks using

[compact peer data summaries](#)

Wolfgang Müller, Andreas Henrich

November 2003 **Proceedings of the 5th ACM SIGMM international workshop on Multimedia information retrieval**

Publisher: ACM Press

Full text available: [pdf\(378.07 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The retrieval facilities of most Peer-to-Peer (P2P) systems are limited to queries based on a unique identifier or a small set of keywords. The techniques used for this purpose are hardly applicable for content-based image retrieval (CBIR) in a P2P network. Furthermore, we will argue that the curse of dimensionality and the high communication overhead prevent the adaptation of multidimensional search trees or fast sequential scan techniques for P2P CBIR. In the present paper we will propose two ...

2 A model of multimedia information retrieval

[Carlo Meghini, Fabrizio Sebastiani, Umberto Straccia](#)

September 2001 **Journal of the ACM (JACM)**, Volume 48 Issue 5

Publisher: ACM Press

Full text available: [pdf\(5.69 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Research on multimedia information retrieval (MIR) has recently witnessed a booming interest. A prominent feature of this research trend is its simultaneous but independent materialization within several fields of computer science. The resulting richness of paradigms, methods and systems may, on the long run, result in a fragmentation of efforts and slow down progress. The primary goal of this study is to promote an integration of methods and techniques for MIR by contributing a conceptual model ...

Keywords: Description logics, fuzzy logics, multimedia information retrieval

3 Computational strategies for object recognition

[Paul Suetens, Pascal Fua, Andrew J. Hanson](#)

March 1992 **ACM Computing Surveys (CSUR)**, Volume 24 Issue 1

Publisher: ACM Press

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index](#)

Full text available: [pdf\(6.37 MB\)](#)

[terms](#), [review](#)

This article reviews the available methods for automated identification of objects in digital images. The techniques are classified into groups according to the nature of the computational strategy used. Four classes are proposed: (1) the simplest strategies, which work on data appropriate for feature vector classification, (2) methods that match models to symbolic data structures for situations involving reliable data and complex models, (3) approaches that fit models to the photometry and ...

Keywords: image understanding, model-based vision, object recognition

4 [Similarity querying II: Using sets of feature vectors for similarity search on voxelized CAD objects](#)



Hans-Peter Kriegel, Stefan Brecheisen, Peer Kröger, Martin Pfeifle, Matthias Schubert
June 2003 **Proceedings of the 2003 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available: [pdf\(838.51 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In modern application domains such as multimedia, molecular biology and medical imaging, similarity search in database systems is becoming an increasingly important task. Especially for CAD applications, suitable similarity models can help to reduce the cost of developing and producing new parts by maximizing the reuse of existing parts. Most of the existing similarity models are based on feature vectors. In this paper, we shortly review three models which pursue this paradigm. Based on the most ...

5 [Links for a better web: Refinement of TF-IDF schemes for web pages using their hyperlinked neighboring pages](#)



Kazunari Sugiyama, Kenji Hatano, Masatoshi Yoshikawa, Shunsuke Uemura
August 2003 **Proceedings of the fourteenth ACM conference on Hypertext and hypermedia**

Publisher: ACM Press

Full text available: [pdf\(211.25 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

In IR (information retrieval) systems based on the vector space model, the TF-IDF scheme is widely used to characterize documents. However, in the case of documents with hyperlink structures such as Web pages, it is necessary to develop a technique for representing the contents of Web pages more accurately by exploiting the contents of their hyperlinked neighboring pages. In this paper, we first propose several approaches to refining the TF-IDF scheme for a target Web page by using the contents ...

Keywords: TF-IDF scheme, WWW, hyperlink, information retrieval

6 [Research sessions: query processing II: Efficient k-NN search on vertically decomposed data](#)



Arjen P. de Vries, Nikos Mamoulis, Niels Nes, Martin Kersten
June 2002 **Proceedings of the 2002 ACM SIGMOD international conference on Management of data**

Publisher: ACM Press

Full text available: [pdf\(1.26 MB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Applications like multimedia retrieval require efficient support for similarity search on large data collections. Yet, nearest neighbor search is a difficult problem in high dimensional spaces, rendering efficient applications hard to realize: index structures

degrade rapidly with increasing dimensionality, while sequential search is not an attractive solution for repositories with millions of objects. This paper approaches the problem from a different angle. A solution is sought in an unconv...

7 Efficient retrieval for browsing large image databases

 Daniel Wu, Ambuj Singh, Divyakant Agrawal, Amr El Abbadi, Terence R. Smith
November 1996 **Proceedings of the fifth international conference on Information and knowledge management**

Publisher: ACM Press

Full text available:  pdf(879.45 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

8 Document and images analysis: Accuracy improvement of automatic text

classification based on feature transformation

 Guowei Zu, Wataru Ohyama, Tetsushi Wakabayashi, Fumitaka Kimura
November 2003 **Proceedings of the 2003 ACM symposium on Document engineering**

Publisher: ACM Press

Full text available:  pdf(136.78 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we describe a comparative study on techniques of feature transformation and classification to improve the accuracy of automatic text classification. The normalization to the relative word frequency, the principal component analysis (K-L transformation) and the power transformation were applied to the feature vectors, which were classified by the Euclidean distance, the linear discriminant function, the projection distance, the modified projection distance and the SVM.

Keywords: automatic text classification, principal component analysis, variable transformation

9 Data clustering: a review

 A. K. Jain, M. N. Murty, P. J. Flynn
September 1999 **ACM Computing Surveys (CSUR)**, Volume 31 Issue 3

Publisher: ACM Press

Full text available:  pdf(636.24 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#), [review](#)

Clustering is the unsupervised classification of patterns (observations, data items, or feature vectors) into groups (clusters). The clustering problem has been addressed in many contexts and by researchers in many disciplines; this reflects its broad appeal and usefulness as one of the steps in exploratory data analysis. However, clustering is a difficult problem combinatorially, and differences in assumptions and contexts in different communities has made the transfer of useful generic co ...

Keywords: cluster analysis, clustering applications, exploratory data analysis, incremental clustering, similarity indices, unsupervised learning

10 Combining supervised learning with color correlograms for content-based image retrieval

 Jing Huang, S. Ravi Kumar, Mandar Mitra
November 1997 **Proceedings of the fifth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(1.42 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

11 Integrating symbolic images into a multimedia database system using classification and abstraction approaches

Aya Soffer, Hanan Samet

December 1998 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 7 Issue 4

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(227.30 KB) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Symbolic images are composed of a finite set of symbols that have a semantic meaning. Examples of symbolic images include maps (where the semantic meaning of the symbols is given in the legend), engineering drawings, and floor plans. Two approaches for supporting queries on symbolic-image databases that are based on image content are studied. The classification approach preprocesses all symbolic images and attaches a semantic classification and an associated certainty factor to each object that ...

Keywords: Image indexing, Multimedia databases, Query optimization, Retrieval by content, Spatial databases, Symbolic-image databases

12 Session 11: multimedia analysis and retrieval: VQ-index: an index structure for similarity searching in multimedia databases

Ertem Tuncel, Hakan Ferhatosmanoglu, Kenneth Rose

December 2002 **Proceedings of the tenth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(525.17 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#)

In this paper, we introduce a novel indexing technique based on efficient compression of the feature space for approximate similarity searching in large multimedia databases. Its main novelty is that state-of-the-art tools from the discipline of data compression are adopted to optimize the complexity-performance tradeoff in large data sets. The design procedure optimizes the query access time by jointly accounting for both database distribution and query statistics. We achieve efficient compress ...

Keywords: approximate similarity searching, clustering, indexing, retrieved information reduction, retrieved set reduction, vector quantization

13 Image similarity search systems: A compact and efficient image retrieval approach based on border/interior pixel classification

Renato O. Stehling, Mario A. Nascimento, Alexandre X. Falção

November 2002 **Proceedings of the eleventh international conference on Information and knowledge management**

Publisher: ACM Press

Full text available:  pdf(890.44 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper presents *\bic* (Border/Interior pixel Classification), a compact and efficient CBIR approach suitable for broad image domains. It has three main components: (1) a simple and powerful image analysis algorithm that classifies image pixels as either border or interior, (2) a new logarithmic distance (*dLog*) for comparing histograms, and (3) a compact representation for the visual features extracted from images. Experimental results show that the *BIC* appro ...

Keywords: CBIR, color histogram, content-based image retrieval, distance function, image analysis

14 Concept features in Re:Agent, an intelligent Email agent Gary BooneMay 1998 **Proceedings of the second international conference on Autonomous agents****Publisher:** ACM PressFull text available:  pdf(1.07 MB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)**15 Poster: Combination of Fisher scores and appearance based features for face recognition** Ling Chen, Hong ManNovember 2003 **Proceedings of the 2003 ACM SIGMM workshop on Biometrics methods and applications****Publisher:** ACM PressFull text available:  pdf(422.83 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

A novel feature generation scheme which combines multiclass mapping of Fisher scores and appearance based features for face recognition (FR) is proposed in this paper. Multi-class mapping of Fisher scores is based on partial derivative analysis of parameters of hidden Markov model (HMM), and appearance based features are obtained directed from face images. Linear discriminant analysis (LDA) is used to analyze the feature vectors generated under this scheme. Recognition performance improvement is ...

Keywords: Fisher score, hidden Markov model, linear discriminant analysis**16 Indexing very high-dimensional sparse and quasi-sparse vectors for similarity searches**

Changzhou Wang, X. Sean Wang

April 2001 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 9 Issue 4**Publisher:** Springer-Verlag New York, Inc.Full text available:  pdf(359.20 KB) Additional Information: [full citation](#), [abstract](#), [citations](#), [index terms](#)

Similarity queries on complex objects are usually translated into searches among their feature vectors. This paper studies indexing techniques for very high-dimensional (e.g., in hundreds) vectors that are sparse or quasi-sparse, i.e., vectors each having only a small number (e.g., ten) of non-zero or significant values. Based on the R-tree, the paper introduces the xS-tree that uses lossy compression of bounding regions to guarantee a reasonable minimum fan-out within the allocated storage ...

Keywords: High-dimensional indexing structure, Lossy compression, Quasi-sparse vector, Similarity search, Sparse vector**17 Vector approximation based indexing for non-uniform high dimensional data sets** Hakan Ferhatosmanoglu, Ertem Tuncel, Divyakant Agrawal, Amr El AbbadiNovember 2000 **Proceedings of the ninth international conference on Information and knowledge management****Publisher:** ACM PressFull text available:  pdf(370.05 KB) Additional Information: [full citation](#), [references](#), [citations](#), [index terms](#)

18 Image Retrieval: Adaptive nearest neighbor search for relevance feedback in large image databases

P. Wu, B. S. Manjunath

October 2001 **Proceedings of the ninth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(1.38 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Relevance feedback is often used in refining similarity retrievals in image and video databases. Typically this involves modification to the similarity metrics based on the user feedback and recomputing a set of nearest neighbors using the modified similarity values. Such nearest neighbor computations are expensive given that typical image features, such as color and texture, are represented in high dimensional spaces. Search complexity is a critical issue while dealing with large databases and ...

Keywords: nearest neighbor search, relevance feedback, similarity retrieval

19 Semantic based image retrieval: a probabilistic approach

Ben Bradshaw

October 2000 **Proceedings of the eighth ACM international conference on Multimedia**

Publisher: ACM Press

Full text available:  pdf(1.05 MB)

Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

This paper describes an approach to image retrieval based on the underlying semantics of images. To extract these semantics a hierarchical, probabilistic approach is proposed. The labels that are extracted in this case are man-made, natural, inside and outside. The hierarchical framework combines class likelihood probability estimates across a number of levels to form a posterior estimate of the probability of class membership. Unlike previous work in this field, the proposed algorithm can do ...

Keywords: image retrieval, image statistics, semantic image analysis

20 Database session 2: querying high-dimensional data II: Dimensionality reduction using magnitude and shape approximations

Ümit Y. Ogras, Hakan Ferhatosmanoglu

November 2003 **Proceedings of the twelfth international conference on Information and knowledge management**

Publisher: ACM Press

Full text available:  pdf(193.50 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

High dimensional data sets are encountered in many modern database applications. The usual approach is to construct a summary of the data set through a lossy compression technique, and use this lower dimensional synopsis to provide fast, approximate answers to the queries. In this paper, we develop a novel dimensionality reduction technique based on partitioning the high dimensional vector space into orthogonal subspaces. First, we find a relation between the Euclidian distance of two n-dimensio ...

Keywords: high dimensional data, shape approximation, similarity search

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